December 2022

GB Connections Reform

Case for change

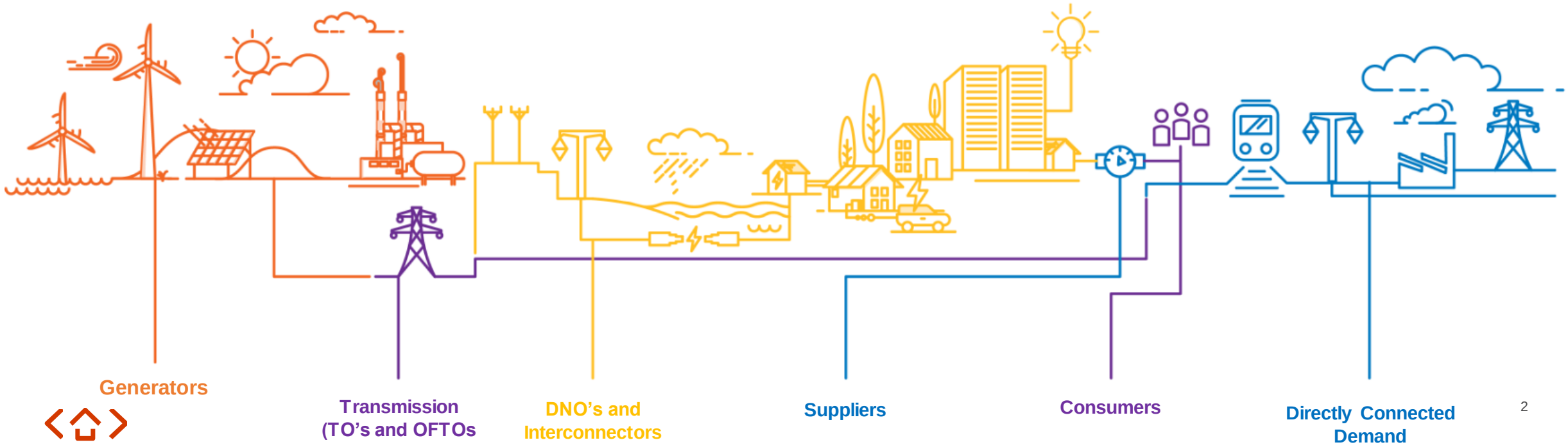
ESO

Executive Summary

There is common consensus across the industry that the current connections process is no longer fit for purpose. The main challenges previously highlighted are:

- increasing application volumes and related increases to the timescales for connection
- many new types of connection customer
- significant changes to the mix of technologies
- greater interaction between Transmission and Distribution networks
- greater complexity and uncertainty over network investment planning
- an urgent need for a holistic, whole systems approach to planning network investment.

We have launched the GB Connections Reform project to fully understand and comprehensively address these challenges. Phase 1 (the subject of this report) sets out the Case for Change. We are now moving into the Design Phase (Phase 2), and then finally into Implementation from end of April 2023.



Context

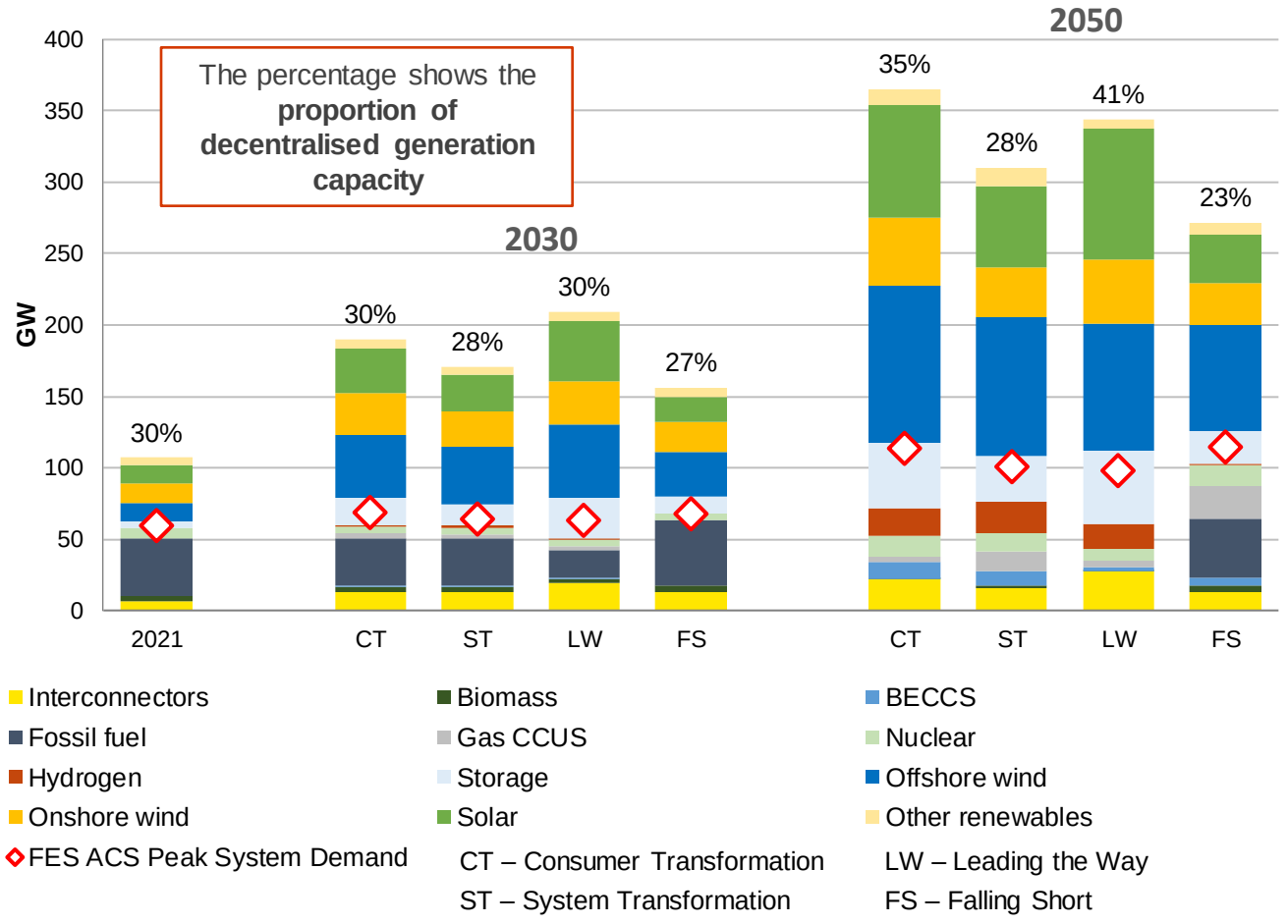
Our Future Energy Scenarios (FES) suggest that delivering Net Zero will require connecting new capacity and new types of customers more quickly than at any time since the current process was established.

The future energy system will look markedly different from today, having undergone changes such as:

- A near doubling of electricity demand by 2050
- Changing customer types (e.g. from steelworks to datacentres) with new and evolving energy needs
- Changing demand patterns (e.g. from the electrification of transport and heat)
- The decentralisation of generation
- Establishment of new technologies such as hydrogen and long duration battery storage, to supplement continued growth in relatively recent technologies such as wind and solar.

Incorporating this new generation and demand will give rise to an increasing volume of connections, as well as significant shifts in the nature of connecting customers and their needs. The current connections process was not designed to accommodate these changing market needs.

Installed generation capacity, peak demand, and percentage of decentralised generation (GW)



Source: FES 2022

The industry faces a connections challenge

We recognise our customers are increasingly receiving significantly later connection dates than they wish. At the same time, we also see a greater risk of an uncoordinated, inefficiently designed network.

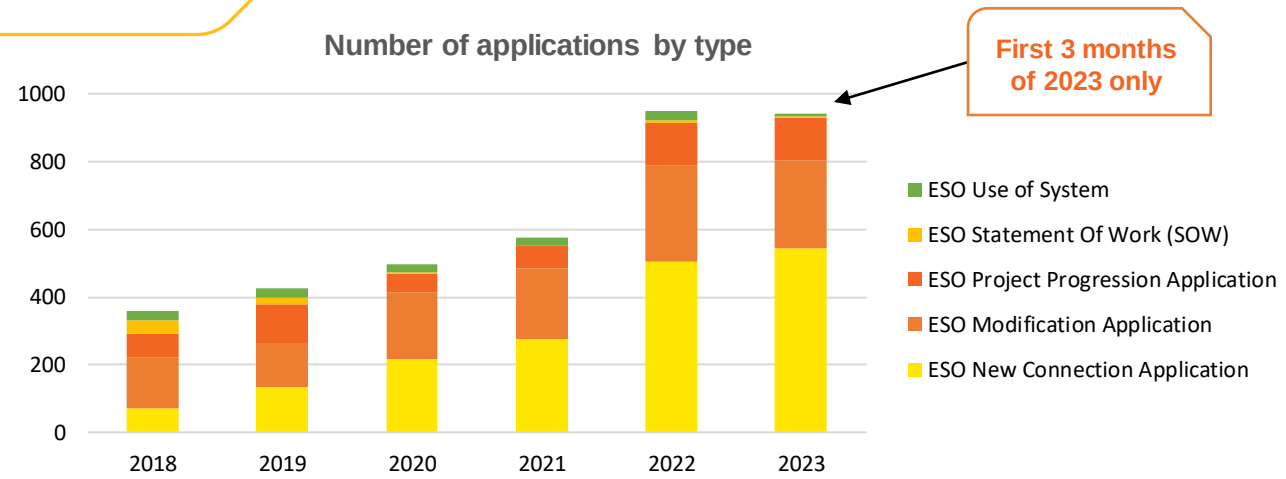
We have seen a major increase in new connections applications volumes in the past 5 years, but in 2022 and 2023 we are seeing a more accelerated growth trend that is exceeding the FES growth projections.

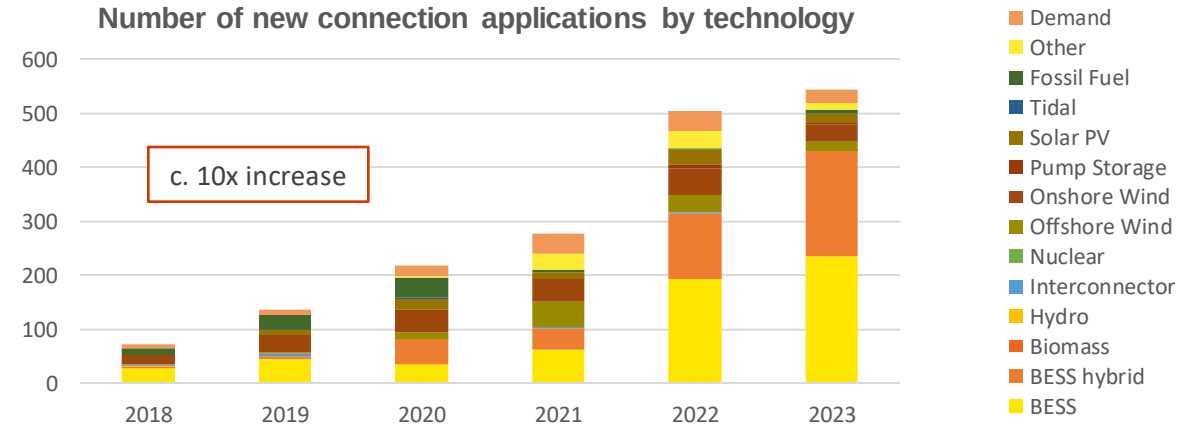
Between 2018 and 2022 the volume of new application offers provided per year grew tenfold, and the volume of offers that will be sent out in the first quarter of 2023 alone will exceed the total volume in 2022.

Whilst growth is apparent across most types of application and asset class, a large proportion of the increase is driven by Battery Energy System Storage (BESS). Project Progression application offers required for Q1 2023 have also exceeded the total volume in 2022, signalling a concurrent increase in application volumes at Distribution level.

30% of the workload in 2022 was driven by modifications to existing contracts, further adding to the volume.

One consequence of this is the increased challenge of planning, designing and building sufficient network to connect all contracted parties. Our Holistic Network Design, published in July 2022[3], showed the benefits to GB consumers (c£5.5bn) of taking the time to develop a coordinated onshore and offshore network design to support the ambition of connecting 50GW of offshore wind by 2030.





Source: ESO internal connections data

[3] https://www.nationalgrideso.com/future-energy/the-pathway-2030-holistic-network-design

Do application volumes align with Net Zero scenarios?

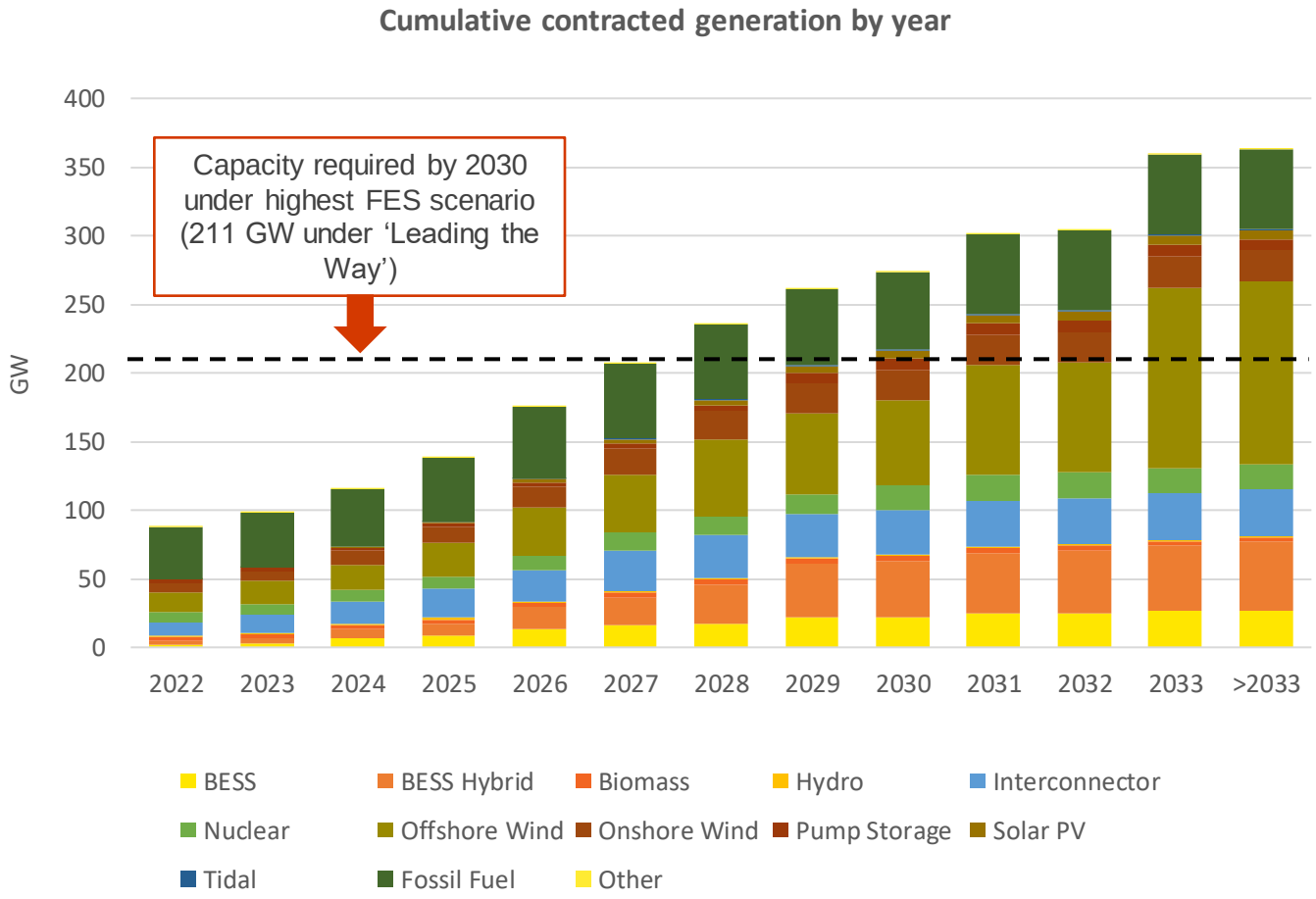
The amount of generation capacity contracted to connect between now and 2030 significantly exceeds even the highest FES scenario estimates.

The FES 2022 indicated that up to 211GW of capacity would be needed by 2030 under the 'Leading the Way' scenario. The Transmission Entry Capacity (TEC) register (which excludes most generation connected to the distribution system) indicates 316GW* of capacity is already contracted, of which 82GW has already connected.

However, based on previous experience, we do not expect all of this capacity to connect, for instance with customers submitting modification applications to push back contract dates, or simply terminating contracts. Uncertainty regarding if and when contracted capacity will come forward is therefore making it harder to plan the system.

Nevertheless, a one-size-fit-all and first come first served connections process obliges us to treat all applications the same, regardless of their likelihood of progressing to connect. This takes up space in the queue and ultimately leads to customers making more speculative applications to secure their place.

Whilst we need to increase our capacity to cope with the increasing volume, we also need to understand whether there are smarter ways to deliver the Net Zero ambitions as well as what customers need.



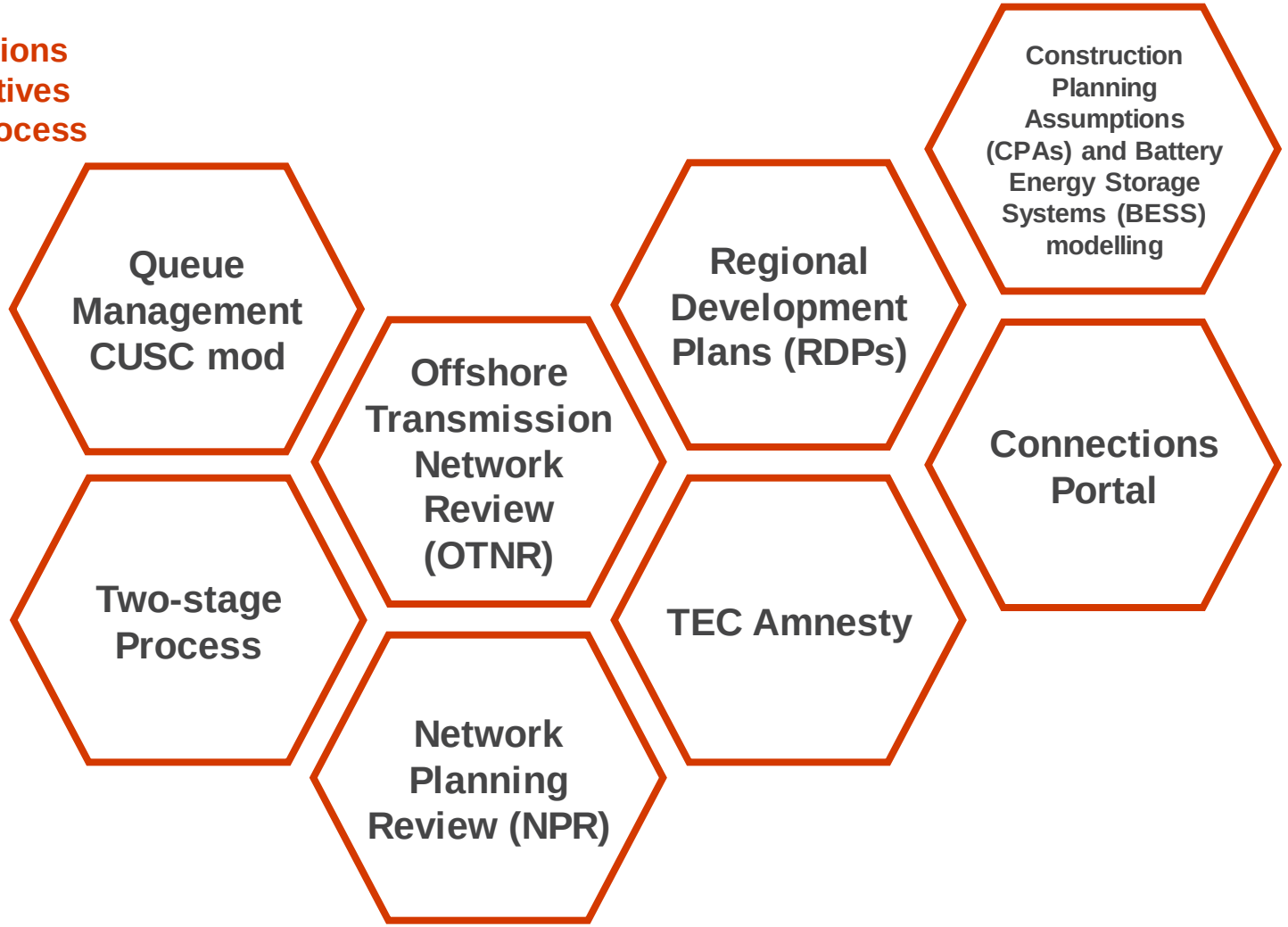
Source: TEC Register (as of 5th December 2022)

* This does not include any capacity that may be removed via the TEC Amnesty process or following the mid 2023 Celtic Sea leasing round outcome, but does include the removal of unsuccessful Scotwind projects

Current actions to improve connections

In parallel to the strategic programme of connections reform, we are progressing various tactical initiatives and improvements to the current connections process over the coming months.

Here we set out summary information on some of those initiatives – further information is available on our website.



However, a more fundamental review of the connections process is needed – to make recommendations for reform across the industry and set the ongoing tactical change within a broader coherent framework.

Our vision for reform

These trends have driven a need for connections reform…

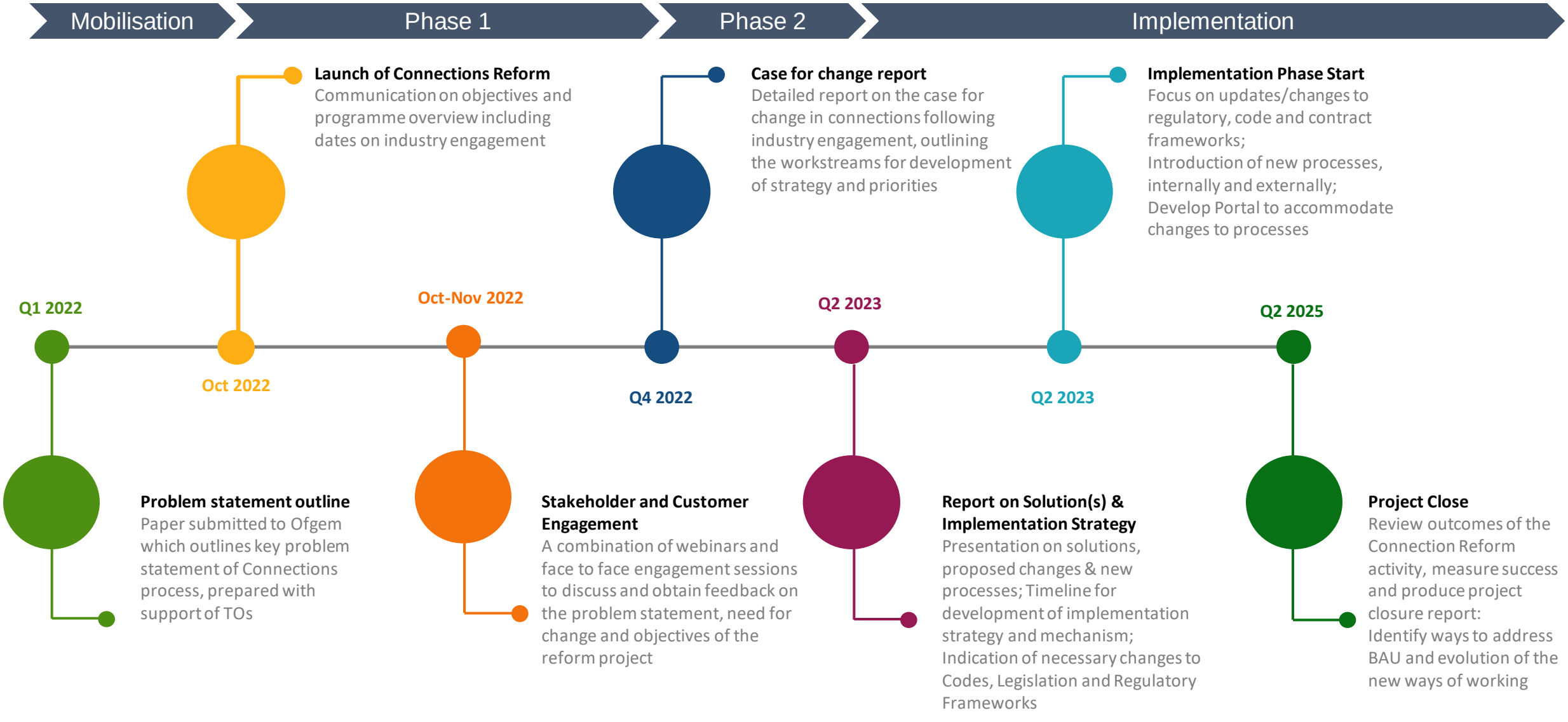
- **Increasing volumes of applications driven by the energy transition**
- **Emergence of new types of customer, technology, and business models**
- **Decentralisation of energy resources and rise in distribution-level connections and operability needs**
- **A need for whole energy system coordination to deliver Net Zero rapidly and at best value for consumers**
- **Inability of the legacy approach to effectively cope with the changing market needs**

…and shaped our vision.

A reformed connections approach must:

- Deliver value to consumers
- Support the delivery of Net Zero and align with the British Energy Security Strategy
- Deliver improvement to Customer Experience & Engagement
- Deliver a Whole System Approach to Transmission Connections (ie fully factoring in Distribution, and perhaps in time other vectors such as hydrogen)
- Enable a process that efficiently advances the projects that are ready to connect
- Embrace the diversity and complexity of Connections within an evolving Energy System
- Be future proof (be adaptable following periodic review)

Timeline for Connections Reform



What have we done in Phase 1

During Phase 1 of Connections Reform, we spoke with connectees, and internal and external stakeholders, using the outputs from these sessions, as well as data and insights into the existing connection journey, to shape the case for change .

Phase 1 Activities

1

Data Discovery and Insight

What?

In the data discovery phase, we reviewed existing data and insight into stakeholder feedback from
- Connection Reform Team knowledge;
- Connections Leads knowledge;
- Customer Surveys; and
- Feedback from previous Customer / Stakeholder sessions

Why?

- To better understand the journey, and to get an initial view of customer feedback, and use this as a foundation to shape the internal and external customer sessions and workshops

2

ESO Stakeholder Sessions

What?

18 sessions were held with ESO Stakeholders including **Connections Leads** (Demand, Generation, Offshore), as well as across **Compliance**, **Policy & Change**, **Policy & Strategy**, **Customer and Stakeholder Engagement, OTNR, Markets** and **Network Planning** reviewing the Connections Journey

Why?

- To help us in shaping the content of workshops with external customers, and gather internal feedback on the journey
- To ensure that we pull on SME expertise and knowledge within the business, and embed this into the final outputs

3

External Workshops: Connectees

What?

9 Connectee Workshops were held with **64 attendees** across the six Connectee Segments, where we gathered **294 comments** on the existing Connections Journey from participants

Why?

- To get candid and detailed insights from connectees – on their experience of connecting, their interactions with ESO and what they think we should be prioritising for Connections Reform
- To help us to build a set of key themes to form the basis of the Case for Change for Connections Reform

4

External Workshops: DNOs and TOs

What?

2 kick-off sessions to introduce Connections Reform, then **3 workshops** with **19 attendees** across TOs and DNOs (following external workshops with connectees), where we gathered **84 comments** on the existing Connections Journey from participants

Why?

- To get the DNO and TO perspectives – as both players within, and customers to, the Connections Journey
- To help us iterate the key themes to form the basis of the Case for Change for Connections Reform

Outputs

- Detailed feedback from internal and external workshops
- As-Is Connections Customer Journey
- Connectee Customer Segmentation
- A set of Case for Change themes tied to feedback from external and internal workshops
- Case for Change Report for Connections Reform

Our Findings from Phase 1 Engagement

Before Application | **During Application and Signing** | **Post Contract Signing**

"1- Options are collaboratively developed throughout the connections lifecycle"

A. Limited opportunity for customers to understand optionality and shape their applications around grid capability

"2- Rapid connections progressed on their merits"

A. Process may inhibit efficient capacity allocation and management

B. Limited ability to prioritise and progress applications/projects that are more ready to connect

"3- A simple, transparent & coordinated approach to connections"

A. The connections process is being inconsistently applied and roles and responsibilities are not always clear

B. The connections process is unnecessarily complex in some areas

Consistent themes across the process

Easy access to self-service tools, consistent data and quality insight

Consistent, skilled & well-resourced engagement

What's Next

Phase 2 - High-Level Design of Solutions and Roadmap for Connection Reform

Moving into Phase 2, we will be establishing specific workstreams to meet design requirements covering:

- Customer Journey and Process Design
- Data and Technology
- Organisation and Skills
- Regulation and Codes

The Case for Change themes identified through Phase 1 will provide the focus and foundation for these workstreams, and the design for the future approach to connections. We will establish both a Delivery Executive Steering Group and a Stakeholder Challenge Group to help guide our Design work – and we will engage with all industry stakeholders over the course of Phase 2 to help identify, test and validate the options we develop and propose for implementation.

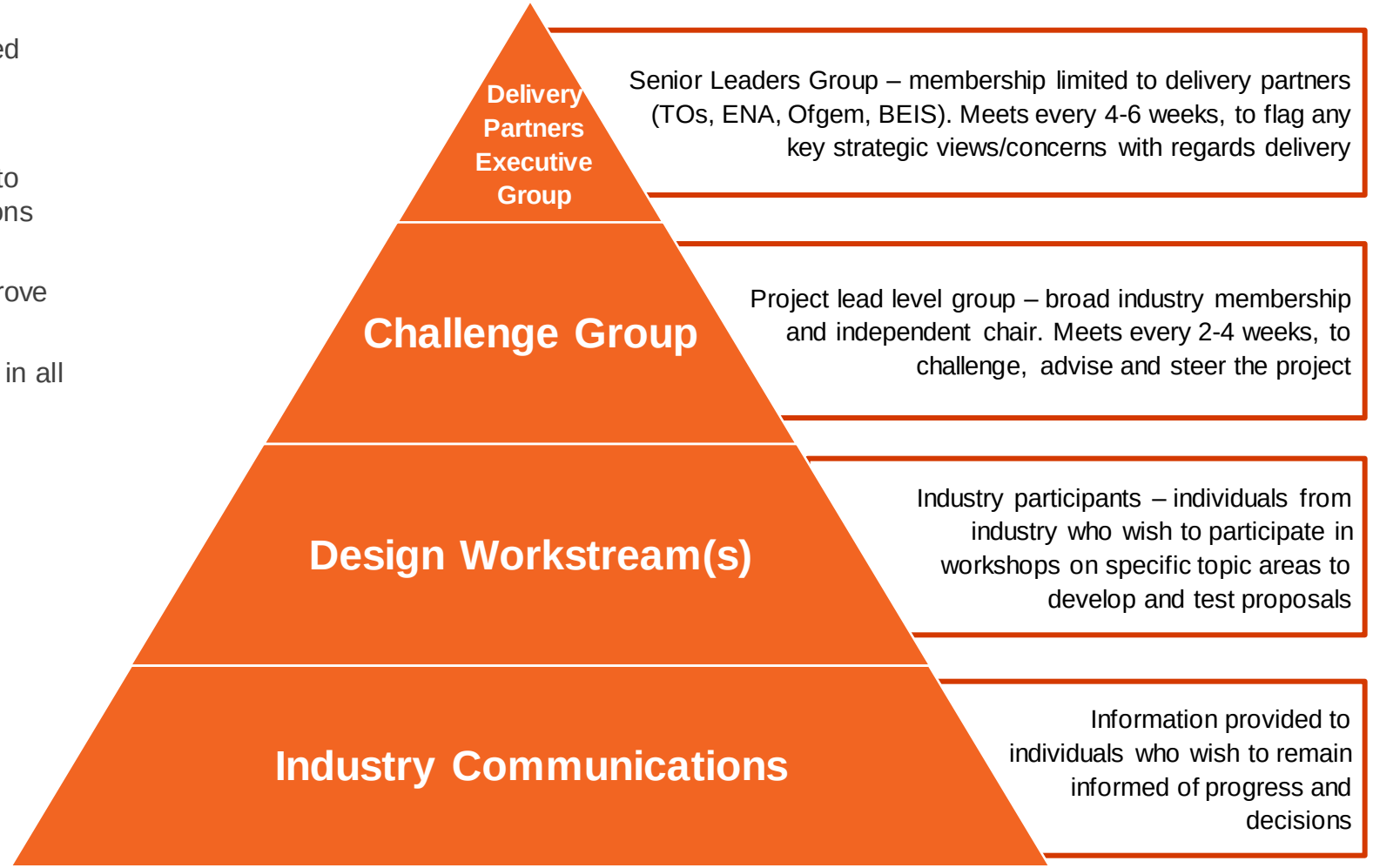
Stakeholder Approach beyond Phase 1

Objectives

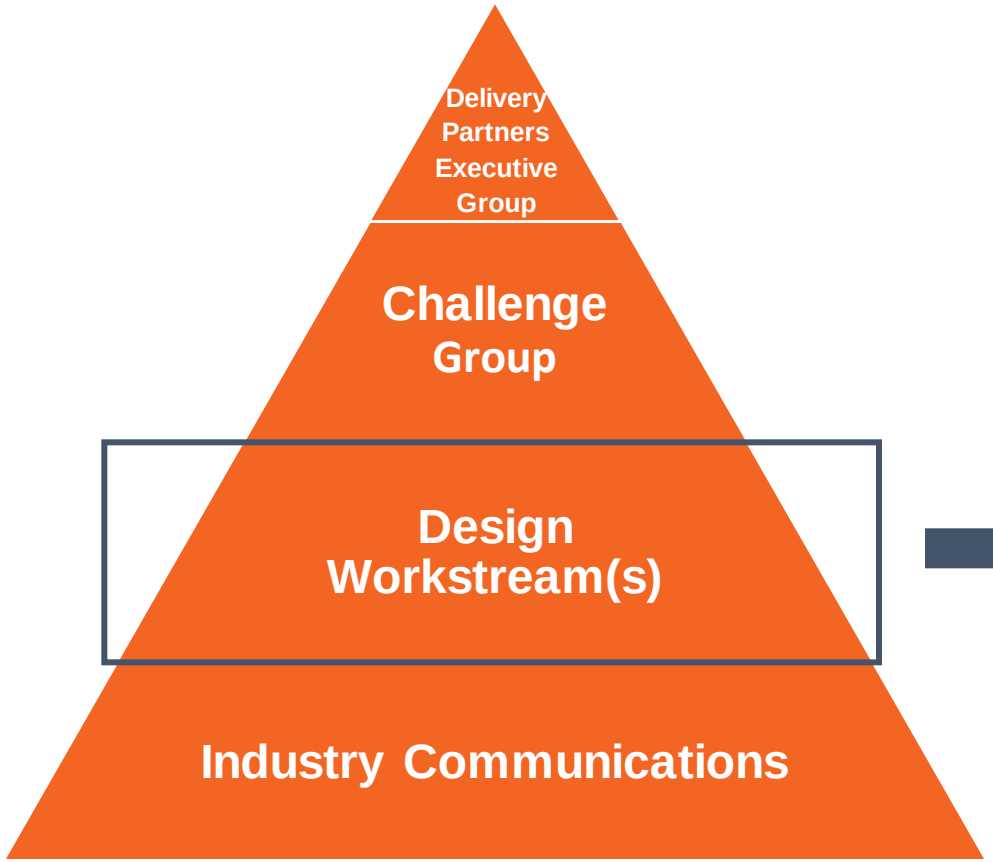
- Ensure all stakeholder groups are actively engaged through regular updates
- Involve all parties at the right levels
- Integrate communications - look for opportunities to deliver communications aligned to other connections changes
- Track and monitor engagement, continuously improve its delivery
- Provide opportunities for feedback and interaction in all sessions

Future Engagement

- We aim to begin establishing these groups and communication channels in February 2023 with progress to be made rapidly afterwards
- We expect to share a high-level delivery roadmap with industry during April 2023



Project Governance in Phase 2



Design Workstreams:

In Phase 2, we expect to establish several design workstreams whose focus will be the design and development of solutions for Connections Reform, building on the Case for Change themes identified in Phase 1.

Workstream 1: Customer Journey & Process Design (L2 process, SLAs/KPIs and solution requirements)

- Market Enablement (Pre-Application)
- Application to Contract Journey (Within-Application)
- Contracted Capacity Management (Post-Acceptance)

Workstream 2: Data & Technology

Workstream 3: Organisation & Skills

Workstream 4: Regulation & Codes

Phase 1 set our Phase 2 Design Objectives

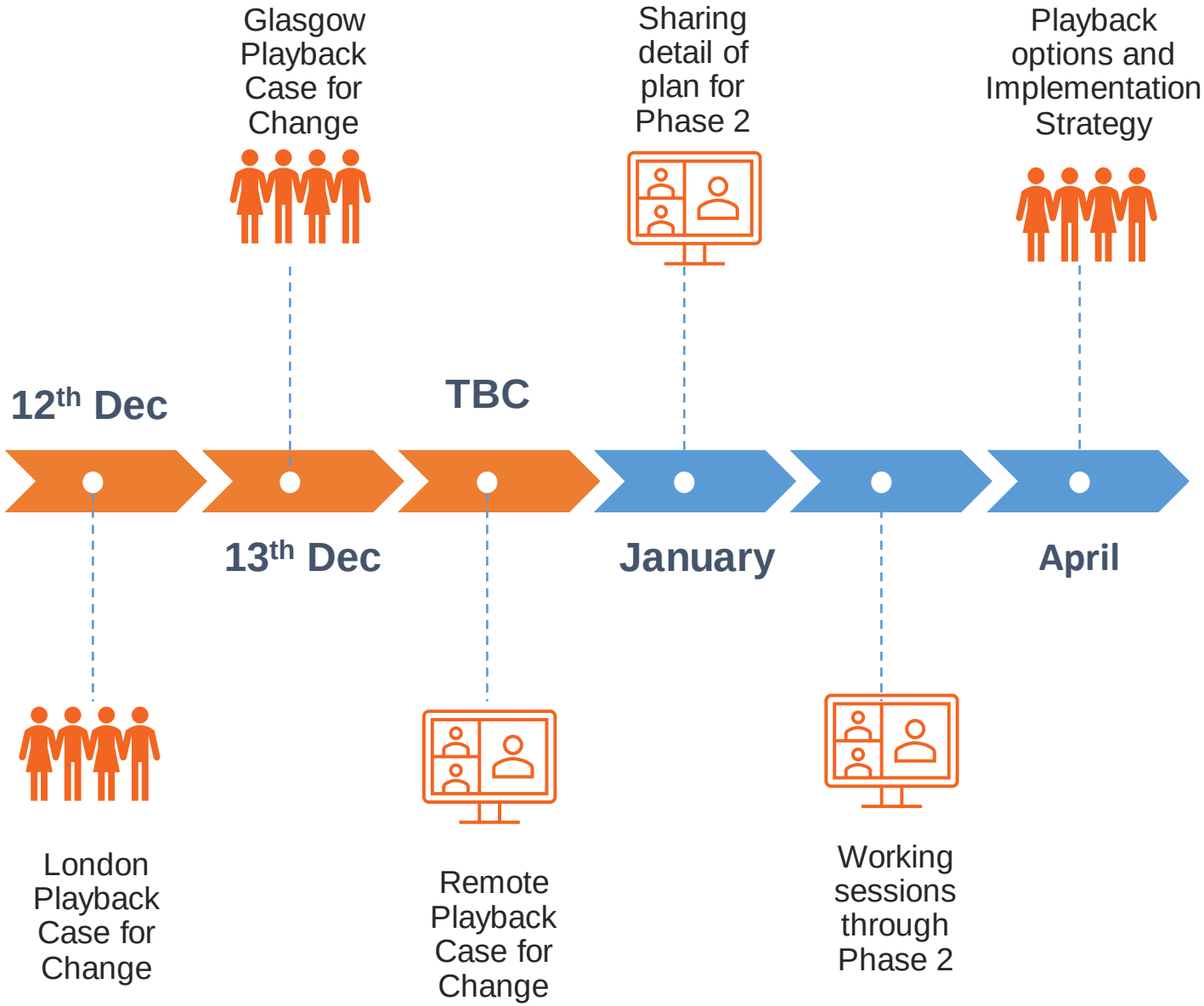
- The 5 key themes which emerged from our stakeholder engagement on the Case for Change in Phase 1 form the core of our Phase 2 Design Objectives
- These are complemented by a couple of Design Objectives to ensure we meet the broader requirements of (a) the UK's Net Zero ambition and (b) the ESO's License objectives
- We have also derived key Design Criteria which map to these Design Objectives and a set of overarching Design Principles which will guide how we determine options in Phase 2

Design Objectives	Design Criteria
Options collaboratively developed throughout the connections lifecycle	• Better informs when, and where, to connect • Reduces risk of wasted effort • Parties able to engage to identify best option(s)
Rapid connections progressed on their merits	• Better recognises nature and status of connectees • Enables “Shovel Ready” projects to progress more quickly • Accelerates timing of connections
A simple, transparent and coordinated approach to connections	• Enables economic, efficient, coordinated network design • Improve Transmission & Distribution coordination • Improve the connections process experience of connectees • Efficiently manages policy complexity/interdependencies
Easy access to self-service tools, consistent data and quality insight	• Gives better access to and visibility of data and info for parties • Enables parties to plan and act more effectively • Reduces reliance and/or workload on others
Consistent, skilled and well-resourced engagement	• Provides coherent customer experience across networks • Skills and capabilities matched to responsibilities and customer needs
Future proof process which supports efficient delivery of Net Zero	• Adaptability to changes in the market landscape • Supports greater investment certainty across industry • Flexibility to evolve process to deliver future needs
Better system operability and cost outcomes for the end consumer	• Maintains or improves operability of network • Delivers more efficient use of network capacity • Reduces overall costs to end consumers • Can be implemented in a timely and effective manner

Design Principles

1. **Start (and finish) with customer needs -** The more we focus on customer needs the better we can meet them
2. **Digital convenience, human empathy -** Provide digital options for convenience and the human touch to build empathy and relationships
3. **Embrace new and evolving business models and technologies -** Enable different ways of working with the industry through mechanisms and innovative technology
4. **Clarity of roles and responsibilities for connections -** Drive and shape the right ownership across the industry

Next Steps


Glasgow Playback Case for Change
Sharing detail of plan for Phase 2
Playback options and Implementation Strategy
12th Dec
13th Dec
TBC
January
April
London Playback Case for Change
Remote Playback Case for Change
Working sessions through Phase 2

Continuing the conversation

Email us with your views on this document at: box.connectionsreform@nationalgrideso.com and one of our team members will get in touch.

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